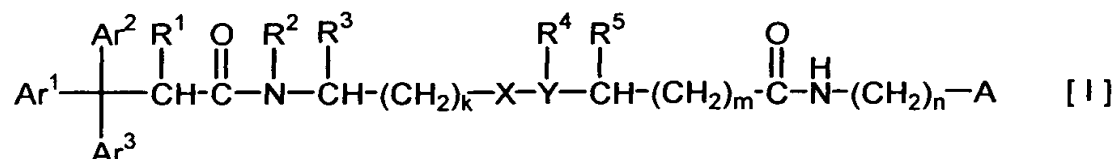
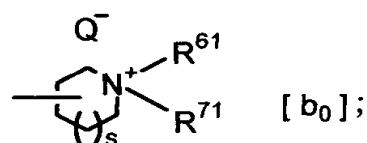
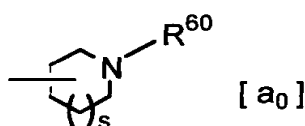


# CLAIMS

1. Compounds which are represented by the following general formula [I]



[in which A stands for a group of the following formula [a<sub>0</sub>] or [b<sub>0</sub>]

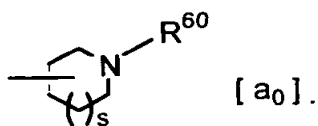


Ar<sup>1</sup>, Ar<sup>2</sup> and Ar<sup>3</sup> each independently stands for optionally substituted phenyl, the substituent being selected from the group consisting of halogen, hydroxyl, lower alkyl, lower alkenyl, lower alkoxy, carbamoyl, lower alkylcarbamoyl and di-lower alkylcarbamoyl; k means 0 or 1; m, n and s each independently means 0, 1 or 2; R<sup>1</sup> stands for hydrogen or optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl and imidazolyl; R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup> and R<sup>5</sup> each independently stands for hydrogen or optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl and imidazolyl, or R<sup>2</sup> and R<sup>3</sup>, or R<sup>4</sup> and R<sup>5</sup>, may together stand for, independently of each other, optionally substituted trimethylene, propenylene,

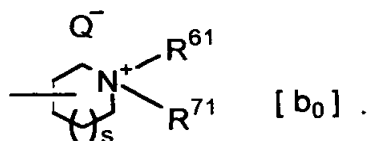
tetramethylene or 2-butenylene group, the substituent being selected from the group consisting of oxo, hydroxyl, amino, lower alkoxy, lower alkanoyloxy, lower alkylamino, di-lower alkylamino, (imino-lower alkyl)amino, lower alkanoylamino, lower alkoxycarbonylamino, (lower alkylcarbamoyl)amino, lower alkylsulfonylamino, guanidino, lower alkoxycarbonyl, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl, imidazolyl and a group represented by  $-R^7$ ,  $R^7$  standing for optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl, lower alkoxycarbonyl and imidazolyl;  $R^{60}$  stands for hydrogen,  $C_1$ - $C_{10}$  alkyl, lower alkenyl, cycloalkyl, cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl, cycloalkenyl-lower alkyl or aralkyl;  $R^{61}$  and  $R^{71}$  each independently stands for  $C_1$ - $C_{10}$  alkyl, lower alkenyl, cycloalkyl, cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl, cycloalkenyl-lower alkyl or aralkyl, or  $R^{61}$  and  $R^{71}$  may together stand for optionally substituted trimethylene, tetramethylene, 2-butenylene, pentamethylene, 3-oxapentamethylene or 2, 3-epoxytetramethylene group, the substituent being selected from the group consisting of oxo, hydroxyl, lower alkyl and lower alkoxy; X stands for carbonyl or methylene; Y stands for nitrogen or methine; and  $Q^-$  stands for anion]

or salts thereof.

2. The compounds according to Claim 1, in which A is a group expressed by the formula [a<sub>0</sub>]

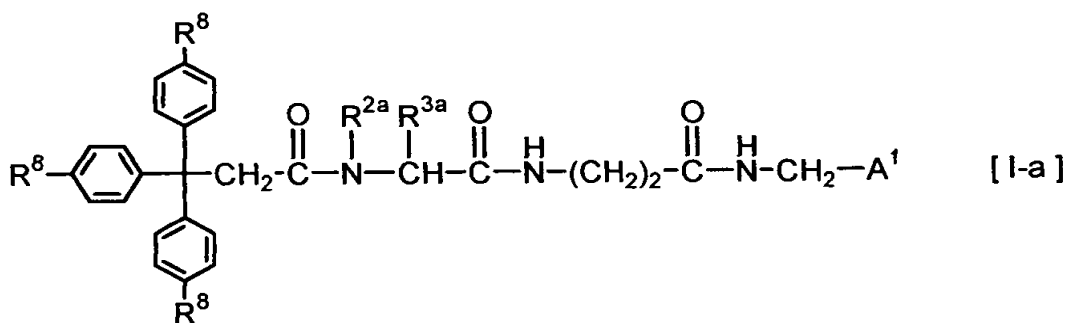


3. The compounds according to Claim 1, in which A is a group expressed by the formula [b<sub>0</sub>]

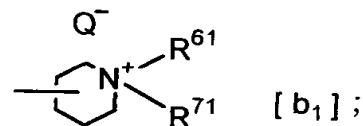
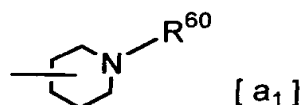


4. The compounds according to Claim 1, in which Ar<sup>1</sup>, Ar<sup>2</sup> and Ar<sup>3</sup> each independently stands for phenyl which is optionally substituted with halogen or lower alkyl; n is 1 or 2; s is 1; and R<sup>1</sup> is hydrogen.

5. The compounds according to Claim 4, which are represented by the general formula [I-a]:

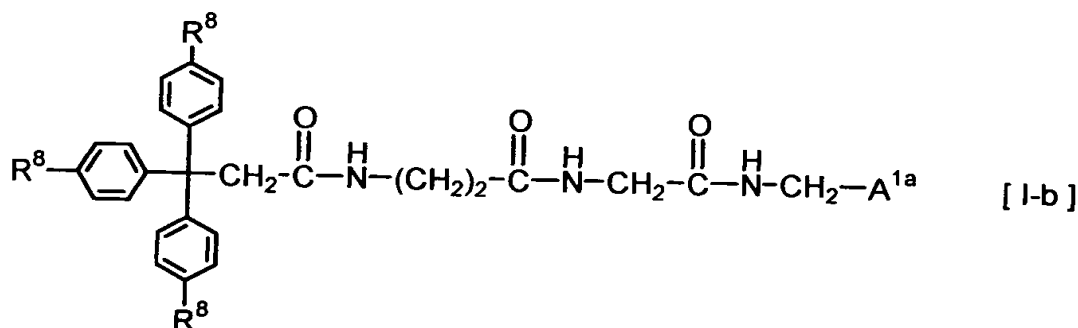


[wherein A<sup>1</sup> stands for a group represented by the formula [a<sub>1</sub>]  
or [b<sub>1</sub>]

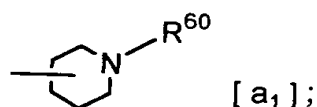


R<sup>2a</sup> and R<sup>3a</sup> each independently stands for hydrogen, or optionally substituted lower alkyl, the substituent being selected from hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl and imidazolyl; R<sup>8</sup> stands for hydrogen, halogen or lower alkyl; R<sup>60</sup> stands for hydrogen, C<sub>1</sub>-C<sub>10</sub> alkyl, lower alkenyl, cycloalkyl, cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl, cycloalkenyl-lower alkyl or aralkyl; R<sup>61</sup> and R<sup>71</sup> each independently stands for C<sub>1</sub>-C<sub>10</sub> alkyl, lower alkenyl, cycloalkyl, cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl, cycloalkenyl-lower alkyl or aralkyl, or R<sup>61</sup> and R<sup>71</sup> may together stand for optionally substituted trimethylene, tetramethylene, 2-butenylene, pentamethylene, 3-oxapentamethylene or 2, 3-epoxytetramethylene group, the substituent being selected from the group consisting of oxo, hydroxyl, lower alkyl and lower alkoxy; and Q<sup>-</sup> stands for anion].

6. The compounds according to Claim 4, which are represented by the general formula [I-b]:

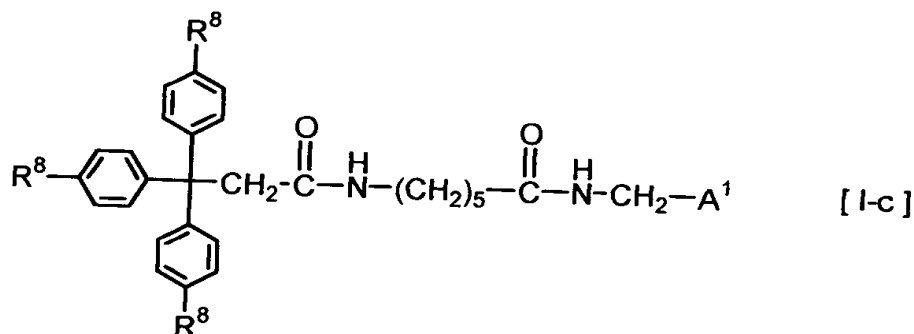


[wherein A<sup>1a</sup> stands for a group of the formula [a<sub>1</sub>]

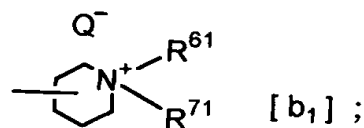
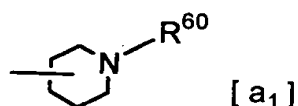


R<sup>8</sup> stands for hydrogen, halogen or lower alkyl; and R<sup>60</sup> stands for hydrogen, C<sub>1</sub>-C<sub>10</sub> alkyl, lower alkenyl, cycloalkyl, cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl, cycloalkenyl-lower alkyl or aralkyl.

7. The compounds according to Claim 4, which are represented by the general formula [I-c]:



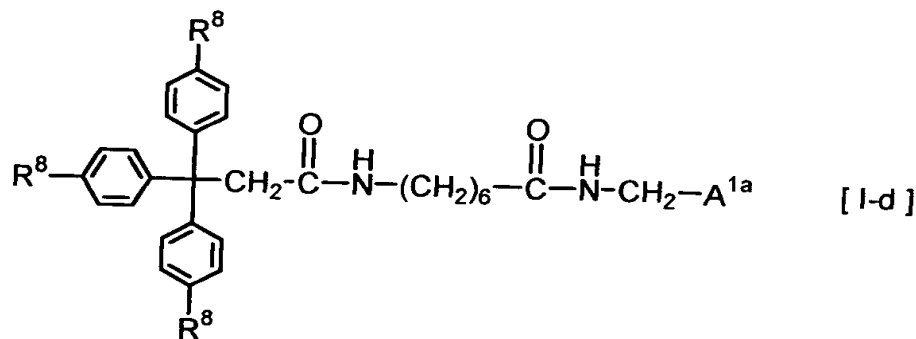
[in which A<sup>1</sup> stands for a group represented by the formula [a<sub>1</sub>] or [b<sub>1</sub>]



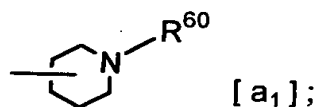
R<sup>8</sup> stands for hydrogen, halogen or lower alkyl; R<sup>60</sup> stands for hydrogen, C<sub>1</sub>-C<sub>10</sub> alkyl, lower alkenyl, cycloalkyl, cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl, cycloalkenyl-lower alkyl or aralkyl; R<sup>61</sup> and R<sup>71</sup> each independently stands for C<sub>1</sub>-C<sub>10</sub> alkyl, lower alkenyl,

cycloalkyl, cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl, cycloalkenyl-lower alkyl or aralkyl, or  $R^{61}$  and  $R^{71}$  may together stand for optionally substituted trimethylene, tetramethylene, 2-butenylene, pentamethylene, 3-oxapentamethylene or 2, 3-epoxytetramethylene group, the substituent being selected from the group consisting of oxo, hydroxyl, lower alkyl and lower alkoxy; and  $Q^-$  stands for anion].

8. The compounds according to Claim 4, which are represented by the general formula [I-d]

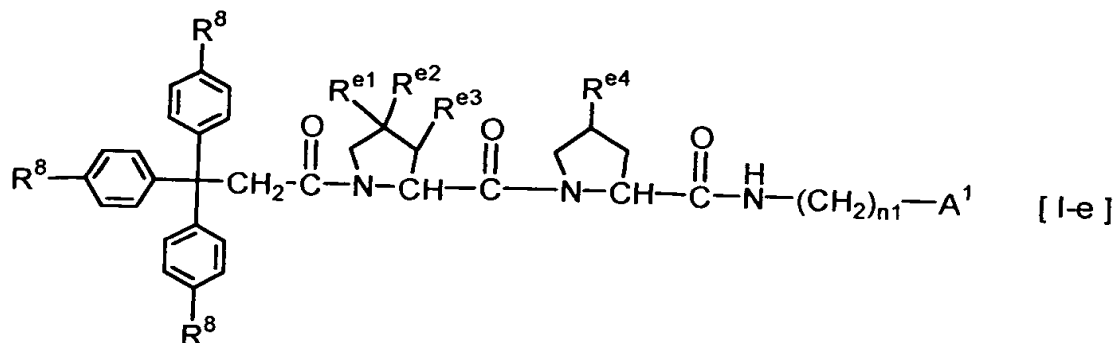


[in which  $A^{1a}$  stands for a group of the formula  $[a_1]$

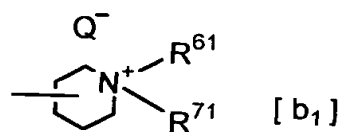
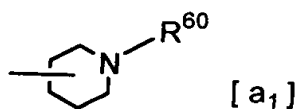


$R^8$  stands for hydrogen, halogen or lower alkyl;  $R^{60}$  stands for hydrogen,  $C_1$ - $C_{10}$  alkyl, lower alkenyl, cycloalkyl, cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl, cycloalkenyl-lower alkyl or aralkyl.

9. The compounds according to Claim 4, which are represented by the general formula [I-e]



[in which A<sup>1</sup> stands for a group represented by the formula [a<sub>1</sub>] or [b<sub>1</sub>]



n<sub>1</sub> stands for 1 or 2; R<sup>e1</sup>, R<sup>e2</sup>, R<sup>e3</sup> and R<sup>e4</sup> each independently stands for hydrogen, hydroxyl, amino, lower alkoxy, lower alkanoyloxy, lower alkylamino, di-lower alkylamino, (imino-lower alkyl)amino, lower alkanoylamino, lower alkoxycarbonylamino, (lower alkylcarbamoyl)amino, lower alkylsulfonylamino, guanidino, lower alkoxycarbonyl, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl, imidazolyl and a group represented by -R<sup>7</sup>; or R<sup>e1</sup> and R<sup>e2</sup> together signify oxo group; R<sup>7</sup> stands for optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl, lower alkoxycarbonyl and imidazolyl; R<sup>8</sup> stands for hydrogen, halogen or lower alkyl; R<sup>60</sup> stands for hydrogen, C<sub>1</sub>-C<sub>10</sub> alkyl, lower alkenyl, cycloalkyl, cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl, cycloalkenyl-lower alkyl or aralkyl; R<sup>61</sup> and R<sup>71</sup> each independently stands for C<sub>1</sub>-C<sub>10</sub> alkyl, lower alkenyl,

cycloalkyl, cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl, cycloalkenyl-lower alkyl or aralkyl, or  $R^{61}$  and  $R^{71}$  may together stand for optionally substituted trimethylene, tetramethylene, 2-butenylene, pentamethylene, 3-oxapentamethylene or 2, 3-epoxytetramethylene group, the substituent being selected from the group consisting of oxo, hydroxyl, lower alkyl and lower alkoxy; and  $Q^-$  stands for anion].

10. The compounds according to Claim 9, in which  $R^{e1}$  is hydrogen or hydroxyl, and all of  $R^{e2}$ ,  $R^{e3}$  and  $R^{e4}$  are hydrogen.
11. The compounds according to Claim 1, 2, 4, 5, 6, 7, 8, 9 or 10, in which  $R^{60}$  is hydrogen,  $C_1$ - $C_{10}$  alkyl, cycloalkyl or cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl.
12. The compounds according to Claim 11, in which said  $C_1$ - $C_{10}$  alkyl as  $R^{60}$  is methyl, ethyl, propyl, isopropyl, butyl, isobutyl, pentyl, 2-methylbutyl, hexyl, 2-methylpentyl, heptyl, octyl or decyl.
13. The compounds according to Claim 11, in which said cycloalkyl group as  $R^{60}$  is cyclopentyl or cyclohexyl.
14. The compounds according to Claim 11, in which said cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl as  $R^{60}$  is cyclopropylmethyl, cyclobutylmethyl, 2-(1-methylcyclopropyl)ethyl, cyclopentylmethyl, (2,2-dimethylcyclopentyl)methyl, 1-cyclopentylethyl, cyclohexylmethyl or 1-cyclohexylethyl.
15. The compounds according to Claim 1, 3, 4, 5, 7 or 9, in which  $R^{61}$  and  $R^{71}$  each independently is  $C_1$ - $C_{10}$  alkyl, lower alkenyl or cycloalkyl-lower alkyl whose ring portion may be substituted with



lower alkyl.

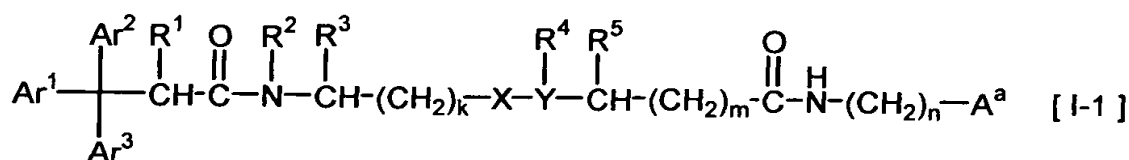
16. The compounds according to Claim 15, in which  $R^{61}$  and  $R^{71}$  each independently is  $C_1$ - $C_6$  alkyl.

17. The compounds according to Claim 16, in which  $R^{61}$  and  $R^{71}$  each independently is methyl, ethyl, propyl or 2-methylbutyl.

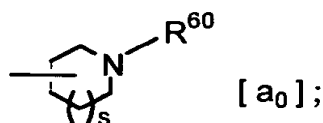
18. The compounds according to Claim 15, in which both  $R^{61}$  and  $R^{71}$  are 2-propenyl or cyclopropylmethyl; or  $R^{61}$  is cyclohexylmethyl and  $R^{71}$  is methyl.

19. The compounds according to Claim 1, 3, 4, 5, 7 or 9, in which  $R^{61}$  and  $R^{71}$  together stand for optionally substituted trimethylene, tetramethylene, 2-butenylene, pentamethylene, 3-oxapentamethylene or 2,3-epoxytetramethylene, the substituent being selected from the group consisting of oxo, hydroxyl, lower alkyl and lower alkoxy.

20. A process for producing a compound represented by the general formula [I-1]:



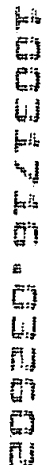
[in which  $A^a$  stands for a group of the formula  $[a_0]$



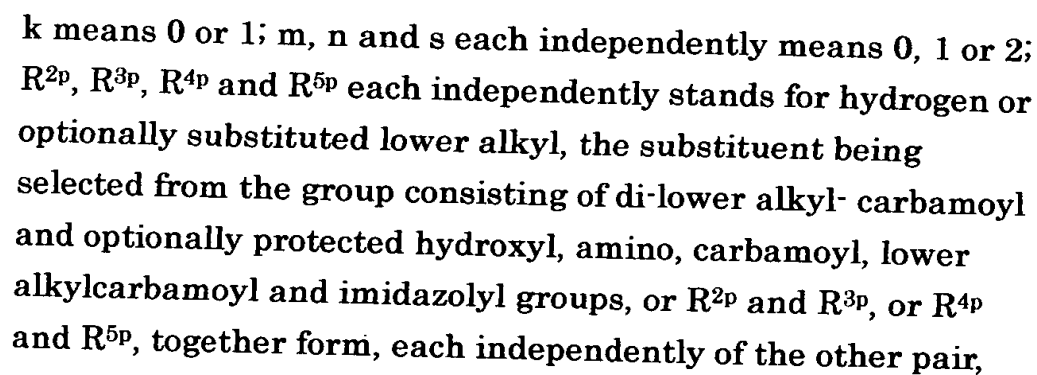
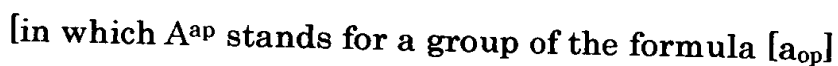
$\text{Ar}^1$ ,  $\text{Ar}^2$  and  $\text{Ar}^3$  each independently stands for optionally substituted phenyl, the substituent being selected from the

group consisting of halogen, hydroxyl, lower alkyl, lower alkenyl, lower alkoxy, carbamoyl, lower alkylcarbamoyl and di-lower alkylcarbamoyl;  $R^1$  stands for hydrogen or optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl and imidazolyl;  $R^2$ ,  $R^3$ ,  $R^4$  and  $R^5$  each independently stands for hydrogen or optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl and imidazolyl, or  $R^2$  and  $R^3$ , or  $R^4$  and  $R^5$ , may together stand for, independently of each other, optionally substituted trimethylene, propenylene, tetramethylene or 2-butenylene group, the substituent being selected from the group consisting of oxo, hydroxyl, amino, lower alkoxy, lower alkanoyloxy, lower alkylamino, di-lower alkylamino, (imino-lower alkyl)amino, lower alkanoylamino, lower alkoxycarbonylamino, (lower alkylcarbamoyl)amino, lower alkylsulfonylamino, guanidino, lower alkoxycarbonyl, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl, imidazolyl and a group represented by  $-R^7$ ,  $R^7$  standing for optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl, lower alkoxycarbonyl and imidazolyl;  $R^{60}$  stands for hydrogen,  $C_1$ - $C_{10}$  alkyl, lower alkenyl, cycloalkyl, cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl, cycloalkenyl-lower alkyl or aralkyl; and k, m, n, s, X and Y have later defined significations]

or salts thereof, which comprises reacting carboxylic acid of the general formula [II]:

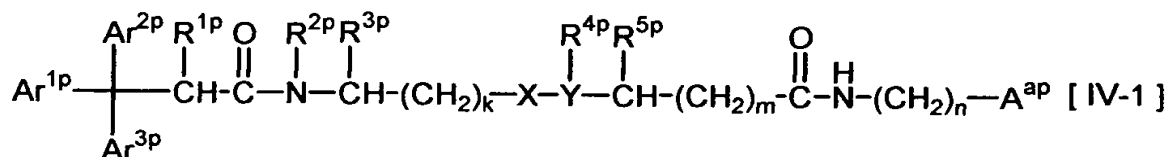


or salt or reactive derivative thereof with a compound of the general formula [III]:



optionally substituted trimethylene, propenylene, tetramethylene or 2-butenylene, the substituent being selected from the group consisting of lower alkoxy, lower alkanoyloxy, di-lower alkylamino, lower alkoxy carbonyl, di-lower alkylcarbamoyl, a group represented by  $-R^{7p}$  and optionally protected oxo, hydroxyl, amino, lower alkylamino, (imino-lower alkyl)amino, lower alkanoylamino, lower alkoxy carbonylamino, (lower alkylcarbamoyl)amino, lower alkylsulfonylamino, guanidino, carbamoyl, lower alkylcarbamoyl and imidazolyl groups;  $R^{7p}$  stands for optionally substituted lower alkyl, the substituent being selected from the group consisting of di-lower alkylcarbamoyl and lower alkoxy carbonyl, and optionally protected hydroxyl, amino, carbamoyl, lower alkylcarbamoyl and imidazolyl groups;  $R^{60p}$  stands for imino-protecting group,  $C_1$ - $C_{10}$  alkyl, lower alkenyl, cycloalkyl, cycloalkyl-lower alkyl whose ring portion being optionally substituted with lower alkyl, cycloalkenyl-lower alkyl or aralkyl; X stands for carbonyl or methylene; and Y stands for nitrogen or methine]

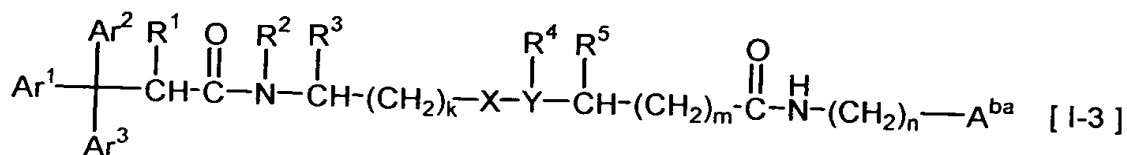
or a salt thereof to form a compound represented by the general formula [IV-1]



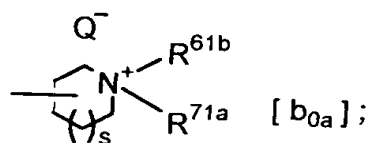
[in which  $A^{ap}$ ,  $\text{Ar}^{1p}$ ,  $\text{Ar}^{2p}$ ,  $\text{Ar}^{3p}$ ,  $k$ ,  $m$ ,  $n$ ,  $R^{1p}$ ,  $R^{2p}$ ,  $R^{3p}$ ,  $R^{4p}$ ,  $R^{5p}$ , X and Y have the above significations]

or a salt thereof, and if necessary removing the protective group(s).

21. A process for producing a compound represented by the general formula [I-3]:



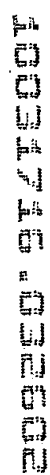
[in which A<sup>ba</sup> signifies a group expressed by the formula [b<sub>0a</sub>]



Ar<sup>1</sup>, Ar<sup>2</sup> and Ar<sup>3</sup> each independently stands for optionally substituted phenyl, the substituent being selected from the group consisting of halogen, hydroxyl, lower alkyl, lower alkenyl, lower alkoxy, carbamoyl, lower alkylcarbamoyl and di-lower alkylcarbamoyl; R<sup>1</sup> stands for hydrogen or optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl and imidazolyl; R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup> and R<sup>5</sup> each independently stands for hydrogen or optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl and imidazolyl, or R<sup>2</sup> and R<sup>3</sup>, or R<sup>4</sup> and R<sup>5</sup>, may together stand for, independently of each other, optionally substituted trimethylene, propenylene, tetramethylene or 2-butenylene group, the substituent being selected from the group consisting of oxo, hydroxyl, amino, lower alkoxy, lower alkanoyloxy, lower alkylamino, di-lower alkylamino (imino-lower alkyl)amino, lower alkanoylamino, lower alkoxycarbonylamino, (lower alkylcarbamoyl)amino, lower alkylsulfonylamino, guanidino, lower alkoxycarbonyl, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl,

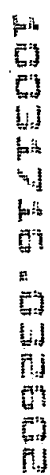
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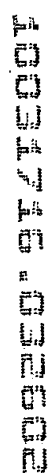


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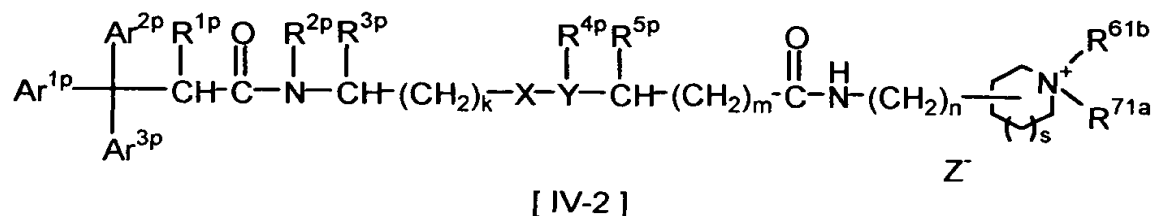
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hydroxyl, carbamoyl and lower alkylcarbamoyl; k means 0 or 1; m, n and s each independently means 0, 1 or 2; R<sup>1p</sup> stands for hydrogen or optionally substituted lower alkyl, the substituent being selected from the group consisting of di-lower alkylcarbamoyl, optionally protected hydroxyl, amino, carbamoyl, lower alkylcarbamoyl and imidazolyl groups; R<sup>2p</sup>, R<sup>3p</sup>, R<sup>4p</sup> and R<sup>5p</sup> each independently stands for hydrogen or optionally substituted lower alkyl, the substituent being selected from the group consisting of di-lower alkylcarbamoyl and optionally protected hydroxyl, amino, carbamoyl, lower alkylcarbamoyl and imidazolyl groups, or R<sup>2p</sup> and R<sup>3p</sup>, or R<sup>4p</sup> and R<sup>5p</sup>, together form, each independently of the other pair, optionally substituted trimethylene, propenylene, tetramethylene or 2-butenylene, the substituent being selected from the group consisting of lower alkoxy, lower alkanoyloxy, di-lower alkylamino, lower alkoxycarbonyl, di-lower alkylcarbamoyl, a group represented by -R<sup>7p</sup> and optionally protected oxo, hydroxyl, amino, lower alkylamino, (imino-lower alkyl)amino, lower alkanoylamino, lower alkoxycarbonylamino, (lower alkylcarbamoyl)amino, lower alkylsulfonylamino, guanidino, carbamoyl, lower alkylcarbamoyl and imidazolyl groups; R<sup>7p</sup> stands for optionally substituted lower alkyl, the substituent being selected from the group consisting of di-lower alkylcarbamoyl and lower alkoxycarbonyl, and optionally protected hydroxyl, amino, carbamoyl, lower alkylcarbamoyl and imidazolyl groups; R<sup>61b</sup> signifies C<sub>1</sub>-C<sub>10</sub> alkyl, lower alkenyl, cycloalkyl, cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl, cycloalkenyl-lower alkyl or aralkyl; X stands for carbonyl or methylene; and Y stands for nitrogen or methine]

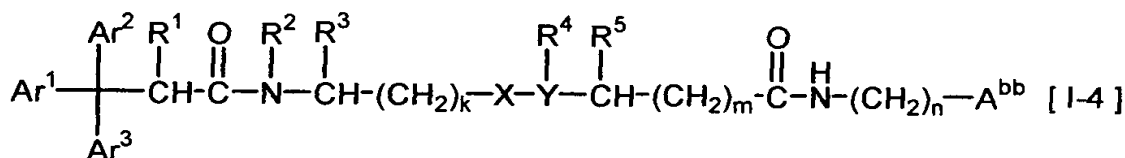
or salt thereof, to form a compound represented by the general formula [IV-2]:



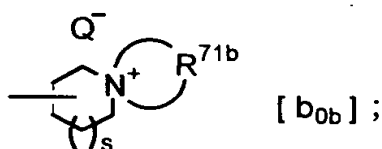
[in which  $\text{Z}^-$  signifies anion;  $\text{Ar}^{1p}$ ,  $\text{Ar}^{2p}$ ,  $\text{Ar}^{3p}$ ,  $k$ ,  $m$ ,  $n$ ,  $s$ ,  $\text{R}^{1p}$ ,  $\text{R}^{2p}$ ,  $\text{R}^{3p}$ ,  $\text{R}^{4p}$ ,  $\text{R}^{5p}$ ,  $\text{R}^{61b}$ ,  $\text{R}^{71a}$ ,  $\text{X}$  and  $\text{Y}$  have the earlier defined significations]

and if necessary removing the protective group(s) and/or exchanging the anion.

22. A process for producing a compound represented by the general formula [I-4]:



[in which  $\text{A}^{bb}$  signifies a group expressed by the formula  $[\text{b}_{0b}]$ :



$\text{Ar}^1$ ,  $\text{Ar}^2$  and  $\text{Ar}^3$  each independently stands for optionally substituted phenyl, the substituent being selected from the group consisting of halogen, hydroxyl, lower alkyl, lower alkenyl, lower alkoxy, carbamoyl, lower alkylcarbamoyl and di-lower alkylcarbamoyl;  $\text{R}^1$  stands for hydrogen or optionally substituted lower alkyl, the substituent being selected from



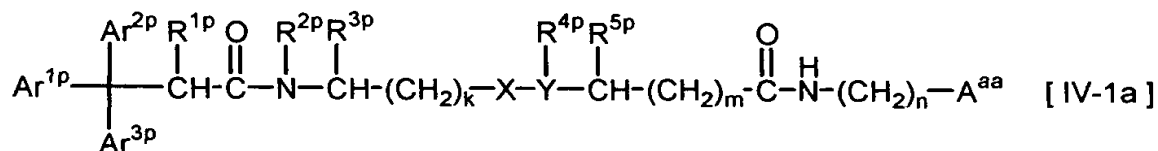
the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl and imidazolyl; R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup> and R<sup>5</sup> each independently stands for hydrogen or optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl and imidazolyl, or R<sup>2</sup> and R<sup>3</sup>, or R<sup>4</sup> and R<sup>5</sup>, may together stand for, independently of each other, optionally substituted trimethylene, propenylene, tetramethylene or 2-butenylene group, the substituent being selected from the group consisting of oxo, hydroxyl, amino, lower alkoxy, lower alkanoyloxy, lower alkylamino, di-lower alkylamino, (imino-lower alkyl)amino, lower alkanoylamino, lower alkoxycarbonylamino, (lower alkylcarbamoyl)amino, lower alkylsulfonylamino, guanidino, lower alkoxycarbonyl, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl, imidazolyl and a group represented by -R<sup>7</sup>, R<sup>7</sup> standing for optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl, lower alkoxycarbonyl and imidazolyl; R<sup>71b</sup> signifies optionally substituted trimethylene, tetramethylene, 2-butenylene, pentamethylene, 3-oxapentamethylene or 2, 3-epoxytetramethylene group, the substituent being selected from the group consisting of oxo, hydroxyl, lower alkyl and lower alkoxy; Q<sup>-</sup> stands for anion; and k, m, n, s, X and Y have the later defined significations]

which comprises reacting a compound represented by the general formula [VII]:

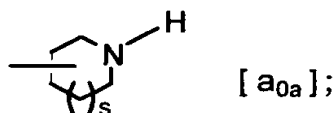


[in which L<sup>3</sup> and L<sup>4</sup> each independently signifies a leaving

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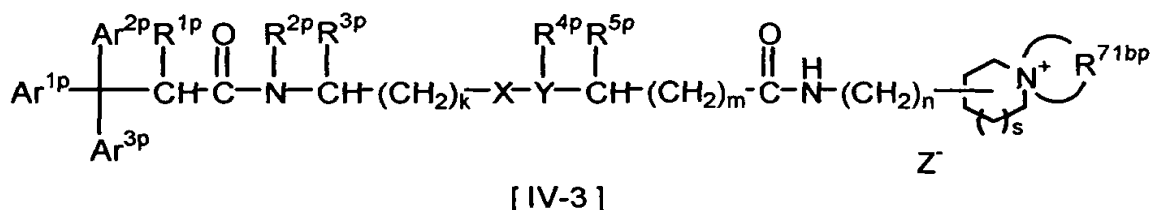
[in which  $A^{aa}$  signifies a group represented by the formula  $[a_{0a}]$ ]



Ar<sup>1p</sup>, Ar<sup>2p</sup> and Ar<sup>3p</sup> each independently stands for optionally substituted phenyl, the substituent being selected from the group consisting of halogen, lower alkyl, lower alkenyl, lower alkoxy and di-lower alkylcarbamoyl and optionally protected hydroxyl, carbamoyl and lower alkylcarbamoyl; k means 0 or 1; m, n and s each independently means 0, 1 or 2; R<sup>1p</sup> stands for hydrogen or optionally substituted lower alkyl, the substituent being selected from the group consisting of di-lower alkylcarbamoyl, optionally protected hydroxyl, amino, carbamoyl, lower alkylcarbamoyl and imidazolyl groups; R<sup>2p</sup>, R<sup>3p</sup>, R<sup>4p</sup> and R<sup>5p</sup> each independently stands for hydrogen or optionally substituted lower alkyl, the substituent being selected from the group consisting of di-lower alkylcarbamoyl and optionally protected hydroxyl, amino, carbamoyl, lower alkylcarbamoyl and imidazolyl groups, or R<sup>2p</sup> and R<sup>3p</sup>, or R<sup>4p</sup> and R<sup>5p</sup>, together form, each

independently of the other pair, optionally substituted trimethylene, propenylene, tetramethylene or 2-butenylene, the substituent being selected from the group consisting of lower alkoxy, lower alkanoyloxy, di-lower alkylamino, lower alkoxy carbonyl, di-lower alkylcarbamoyl, a group represented by  $-R^{7p}$  and optionally protected oxo, hydroxyl, amino, lower alkylamino, (imino-lower alkyl)amino, lower alkanoylamino, lower alkoxy carbonylamino, (lower alkylcarbamoyl)amino, lower alkylsulfonylamino, guanidino, carbamoyl, lower alkylcarbamoyl and imidazolyl groups;  $R^{7p}$  stands for optionally substituted lower alkyl, the substituent being selected from the group consisting of di-lower alkylcarbamoyl and lower alkoxy carbonyl, and optionally protected hydroxyl, amino, carbamoyl, lower alkylcarbamoyl and imidazolyl groups; X stands for carbonyl or methylene and Y stands for nitrogen or methine]

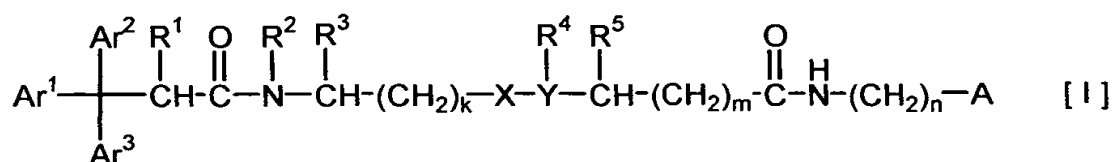
or a salt thereof, to form a compound of the general formula [IV-3]



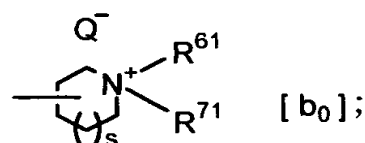
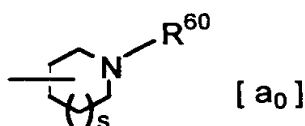
[in which  $Z^-$  signifies anion;  $\text{Ar}^{1p}$ ,  $\text{Ar}^{2p}$ ,  $\text{Ar}^{3p}$ , k, m, n, s,  $\text{R}^{1p}$ ,  $\text{R}^{2p}$ ,  $\text{R}^{3p}$ ,  $\text{R}^{4p}$ ,  $\text{R}^{5p}$ ,  $\text{R}^{71bp}$ , X and Y have the earlier defined significations]

and if necessary removing protective group(s) and/or exchanging the anion.

23. Treating agents for diseases associated with muscarinic  $M_3$  receptors, which contain as the active ingredient the compounds represented by the general formula [I]



[in which A stands for a group of the following formula [a<sub>0</sub>] or [b<sub>0</sub>]

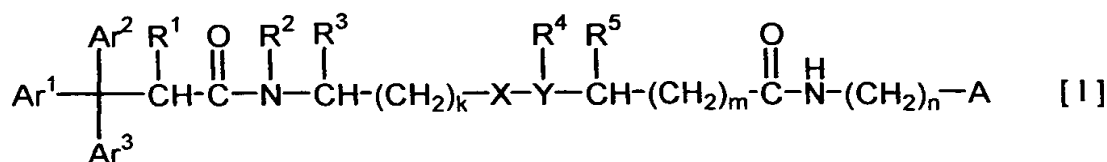


Ar<sup>1</sup>, Ar<sup>2</sup> and Ar<sup>3</sup> each independently stands for optionally substituted phenyl, the substituent being selected from the group consisting of halogen, hydroxyl, lower alkyl, lower alkenyl, lower alkoxy, carbamoyl, lower alkylcarbamoyl and di-lower alkylcarbamoyl; k means 0 or 1; m, n and s each independently means 0, 1 or 2; R<sup>1</sup> stands for hydrogen or optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl and imidazolyl; R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup> and R<sup>5</sup> each independently stands for hydrogen or optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl and imidazolyl, or R<sup>2</sup> and R<sup>3</sup>, or R<sup>4</sup> and R<sup>5</sup>, may together stand for, independently of each other, optionally substituted trimethylene, propenylene, tetramethylene or 2-butenylene group, the substituent being selected from the group consisting of oxo, hydroxyl, amino, lower alkoxy, lower alkanoyloxy, lower alkylamino, di-lower alkylamino, (imino-lower alkyl)amino, lower alkanoylamino, lower alkoxycarbonylamino, (lower alkylcarbamoyl)amino,

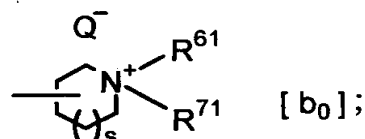
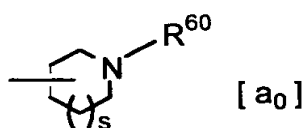
lower alkylsulfonylamino, guanidino, lower alkoxycarbonyl, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl, imidazolyl and a group represented by  $-R^7$ ,  $R^7$  standing for optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl, lower alkoxycarbonyl and imidazolyl;  $R^{60}$  stands for hydrogen,  $C_1$ - $C_{10}$  alkyl, lower alkenyl, cycloalkyl, cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl, cycloalkenyl-lower alkyl or aralkyl;  $R^{61}$  and  $R^{71}$  each independently stands for  $C_1$ - $C_{10}$  alkyl, lower alkenyl, cycloalkyl, cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl, cycloalkenyl-lower alkyl or aralkyl, or  $R^{61}$  and  $R^{71}$  may together stand for optionally substituted trimethylene, tetramethylene, 2-butenylene, pentamethylene, 3-oxapentamethylene or 2, 3-epoxytetramethylene group, the substituent being selected from the group consisting of oxo, hydroxyl, lower alkyl and lower alkoxy; X stands for carbonyl or methylene; Y stands for nitrogen or methine; and  $Q^-$  stands for anion]

or salts thereof.

24. Treating agents for chronic obstructive pulmonary diseases, chronic bronchitis, asthma, chronic respiratory tract obstruction, fibroid lung, pulmonary emphysema and rhinitis; irritable bowel syndrome, convulsive colitis, gastroduodenal ulcer, convulsion or hyperanakisia of digestive tract, diverticulitis and pain accompanying contraction of smooth muscles of the digestive system; urinary incontinence, urgency and pollakiuria in nervous pollakiuria, neurogenic bladder, nocturnal enuresis, unstable bladder, cystospasm and chronic cystitis; and motion sickness, which agents contain as the active ingredient the compounds represented by the general formula [I]



[in which A stands for a group of the following formula [a<sub>0</sub>] or [b<sub>0</sub>]



Ar<sup>1</sup>, Ar<sup>2</sup> and Ar<sup>3</sup> each independently stands for optionally substituted phenyl, the substituent being selected from the group consisting of halogen, hydroxyl, lower alkyl, lower alkenyl, lower alkoxy, carbamoyl, lower alkylcarbamoyl and di-lower alkylcarbamoyl; k means 0 or 1; m, n and s each independently means 0, 1 or 2; R<sup>1</sup> stands for hydrogen or optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl and imidazolyl; R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup> and R<sup>5</sup> each independently stands for hydrogen or optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl and imidazolyl, or R<sup>2</sup> and R<sup>3</sup>, or R<sup>4</sup> and R<sup>5</sup>, may together stand for, independently of each other, optionally substituted trimethylene, propenylene, tetramethylene or 2-butenylene group, the substituent being selected from the group consisting of oxo, hydroxyl, amino, lower alkoxy, lower alkanoyloxy, lower alkylamino, di-lower alkylamino, (imino-lower alkyl)amino, lower alkanoylamino, lower alkoxycarbonylamino, (lower alkylcarbamoyl)amino,

lower alkylsulfonylamino, guanidino, lower alkoxycarbonyl, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl, imidazolyl and a group represented by  $-R^7$ ,  $R^7$  standing for optionally substituted lower alkyl, the substituent being selected from the group consisting of hydroxyl, amino, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl, lower alkoxycarbonyl and imidazolyl;  $R^{60}$  stands for hydrogen,  $C_1$ - $C_{10}$  alkyl, lower alkenyl, cycloalkyl, cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl, cycloalkenyl-lower alkyl or aralkyl;  $R^{61}$  and  $R^{71}$  each independently stands for  $C_1$ - $C_{10}$  alkyl, lower alkenyl, cycloalkyl, cycloalkyl-lower alkyl whose ring portion may be substituted with lower alkyl, cycloalkenyl-lower alkyl or aralkyl, or  $R^{61}$  and  $R^{71}$  may together stand for optionally substituted trimethylene, tetramethylene, 2-butenylene, pentamethylene, 3-oxapentamethylene or 2, 3-epoxytetramethylene group, the substituent being selected from the group consisting of oxo, hydroxyl, lower alkyl and lower alkoxy; X stands for carbonyl or methylene; Y stands for nitrogen or methine; and  $Q^-$  stands for anion]

or salts thereof.